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Fig. 1

FIG. 2

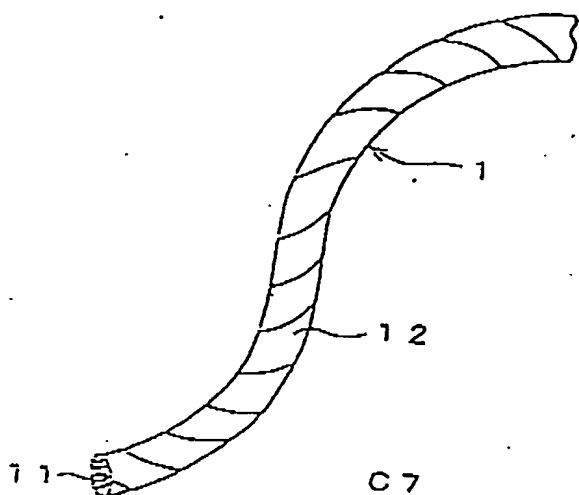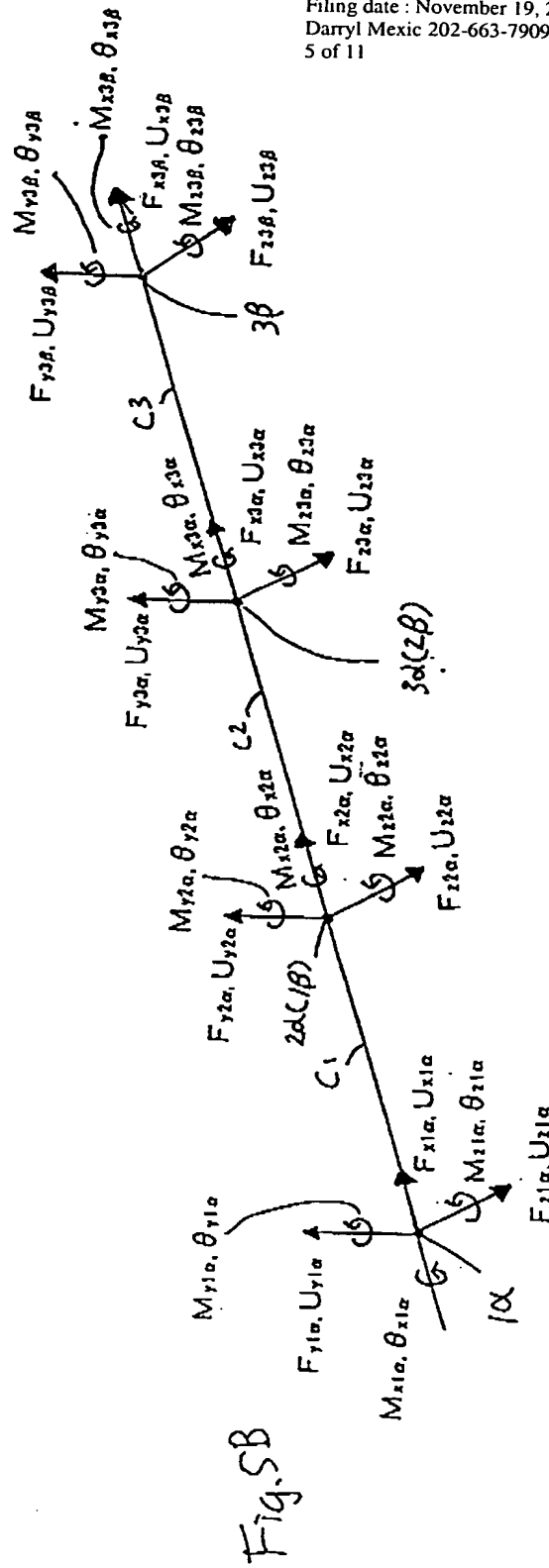|	CONSTRAINED DEGREE OF FREEDOM / SUPPORTING MEMBER	X-AXIS DIRECTION TRANSLATION	Y-AXIS DIRECTION TRANSLATION	Z-AXIS DIRECTION TRANSLATION	ROTATION AROUND X-AXIS	ROTATION AROUND Y-AXIS	ROTATION AROUND Z-AXIS
COMPLETELY CONSTRAINED	CONNECTOR	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE
COMPLETELY CONSTRAINED	LONG HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE
ROTATABLY CONSTRAINED	ROUND HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE
ROTATABLY CONSTRAINED	CORRUGATED LONG HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE	IMPOSSIBLE	IMPOSSIBLE
ROTATABLY CONSTRAINED	CORRUGATED ROUND HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE	IMPOSSIBLE	POSSIBLE
COMPLETELY CONSTRAINED	BRANCH POINT	POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE

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FIG. 3A

FIG. 3B

FIG. 3C

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FIG 4

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Fig. 5A

Fig. 5B

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FIG.6A

FIG.6B

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EXTERIOR TYPE	W/H DIAMETER 1-5	W/H DIAMETER 6-10	W/H DIAMETER 11-15	
NO EXTERIOR	10	12	14	: .
TAPE-WOUND 1	20	: .	: .	: .
TAPE-WOUND 2	30	: .	: .	: .
. . .	. . .	. . .	. . .	- . .

FIG. 7

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Microcomputer

マイクロコンピュータ 21

21a
CPU

ROM 21b   RAM 21c

Input Apparatus

入力装置 22

Display Apparatus

表示装置 23

Printing Apparatus

印字装置 24

28

特性テーブル 25a — Characteristic Table

記憶装置 25 — Storing Apparatus

通信I/F 26 — Communication I/F

RW装置 27 — RW Apparatus

形状予測
プログラム 29a — Shape Predicting Program

記録媒体 29

Recording Medium

FIG. 8

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START,

S1 DRAW SHAPE IN CORRESPONDENCE WITH MANUAL OPERATION,

S2 EXTRACT SHAPE CHARACTERISTIC,

S3 CALCULATE MATERIAL CHARACTERISTIC,

S4 EXTRACT CONSTRAINING CONDITION,

S5 CALCULATE PREDICTED SHAPE BY USING FEM,

S6 SUCCESSFUL IN CALCULATING PREDICTED SHAPE?,

S7 DRAW PREDICTED SHAPE IN PLACE OF SHAPE BEING DRAWN,

S8 OUTPUT ALARM,

S9 IS THERE CHANGE IN SHAPE IN CORRESPONDENCE WITH MANUAL OPERATION?,

END

Fig. 9

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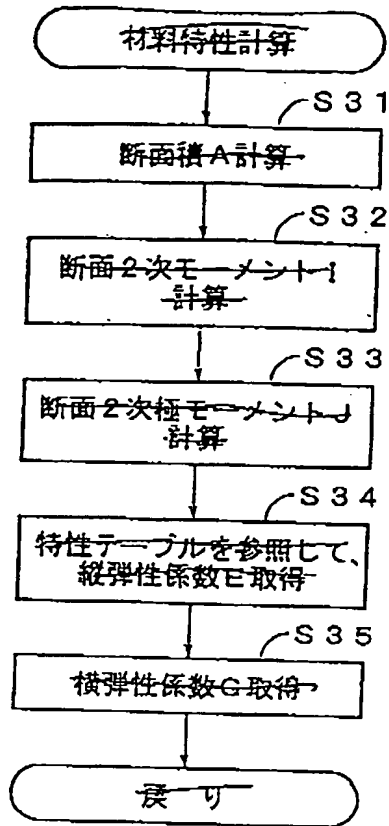Darryl Mexic 202-663-7909
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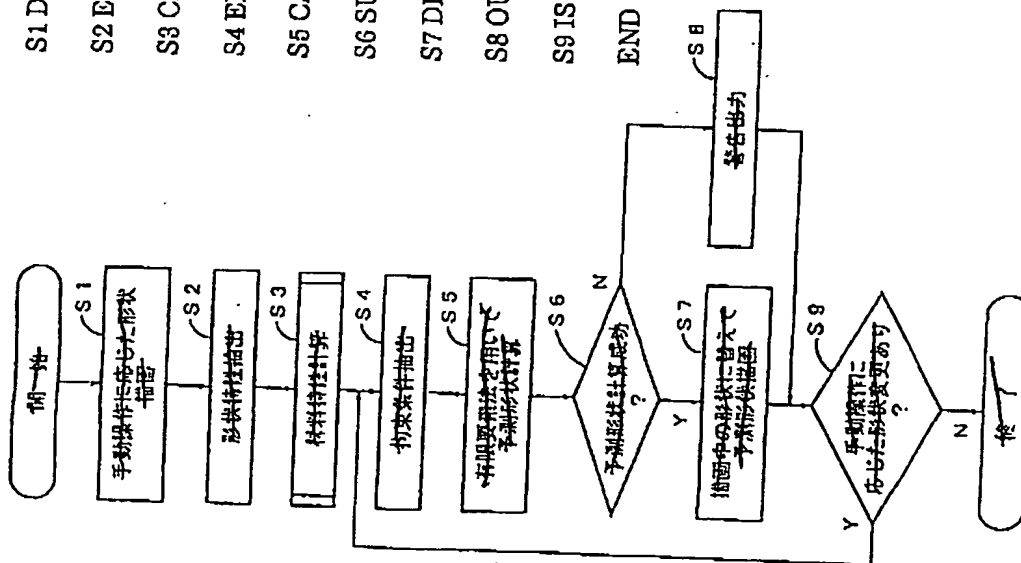
Fig. 10

MATERIAL CHARACTERISTIC CALCULATION

S31 CALCULATE SECTIONAL AREA A

S32 CALCULATE MOMENT OF INERTIA I

S33 CALCULATE POLAR MOMENT OF INERTIA G

S34 ACQUIRE LONGITUDINAL MODULUS OF ELASTICITY E

IN REFERENCE TO CHARACTERISTIC TABLE
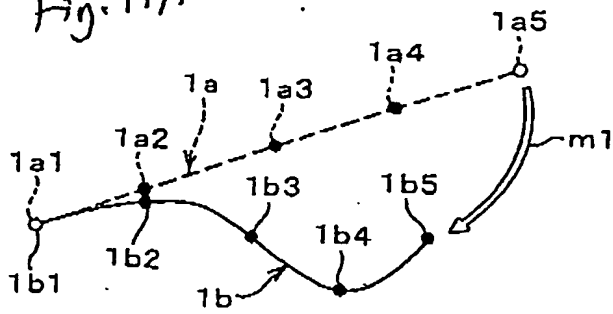
S35 ACQUIRE TRANSVERSE MODULUS OF ELASTICITY G

RETURN

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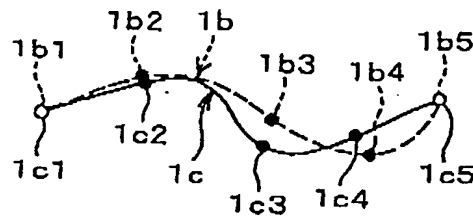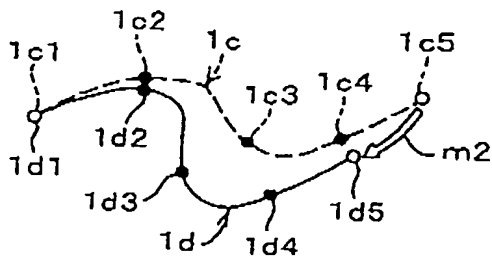Filing date : November 19, 2003
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Fig. 11A

Fig. 11B

Fig. 11C

Fig. 11D

Fig. 11E